Ethnic inequalities in patient safety in Dutch hospital care
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Citation for published version (APA):
Chapter 8

General discussion
This thesis aimed at investigating ethnic inequalities in patient safety in Dutch hospital care. In this final chapter, the main findings are summarized and discussed and methodological considerations are pointed out. Finally, implications for practice, policy and future research are proposed.

**MAIN FINDINGS**

**PART 1 - Are there ethnic inequalities in excess lengths of stay (LOS), readmission rates and total joint arthroplasty rates?**

We found significant ethnic inequalities in excess LOS and unplanned readmissions. Hospitalized patients of ethnic minority origin more often had excess LOS and were more often readmitted. Ethnic inequalities were most pronounced in older patients: all non-western ethnic groups older than 45 had an increased risk of excess LOS compared to ethnic Dutch patients, with ORs (adjusted for case mix) varying from 1.05 (95% CI 1.02-1.08) for other non-western patients to 1.14 (95% CI 1.07–1.22) for Moroccan patients. The risk for unplanned readmission in patients older than 45 years was increased for Turkish (OR 1.24, 95% CI 1.18-1.30) and Surinamese patients (OR 1.11, 95% CI 1.07-1.16). These differences were explained partially, although not substantially, by differences in socio-economic status between ethnic minority patients and ethnic Dutch patients.

In the second study with this record linked dataset, we found contrasting patterns for total hip arthroplasty (THA) rates and total knee arthroplasty rates (TKA) among different ethnic groups. Patients of Turkish (OR 0.27), Surinamese (OR 0.20) or Antillean (OR 0.23) origin were less likely to undergo THA than ethnic Dutch patients. However, ethnic minority patients older than 65 were more likely to undergo TKA than the ethnic Dutch population (ORs 1.18-1.83).

**PART 2 - Are there ethnic inequalities in AEs?**

We included 763 Dutch patients and 576 ethnic minority patients during their hospital admission. They all completed the patient questionnaire and their records were reviewed for the presence of AEs around four months after discharge. We found no significant difference in the incidence of AEs: 11% (95% CI 9-14) in ethnic Dutch patients and 10% (95% CI 7-12) in ethnic minority patients. Also, there was no significant difference in the incidence of preventable AEs: 3% (95% CI 1-4) in ethnic Dutch patients and 1% (95% CI 0-2) in ethnic minority patients. Inadequate Dutch language proficiency, inadequate health literacy, and low educational level did not increase the risk of an AE.

**PART 3 – Are there ethnic inequalities in patient safety risks?**

Relatives of hospitalized patients often took over the role of interpreter, care provider, or patient, and this led to patient safety risks as well as protection of patient safety. Good understanding between relatives and care providers enhanced patient safety. Situations in hospital care where a language barrier threatened patient safety included daily nursing tasks (i.e. medication administration, pain management, fluid balance management)
and patient-physician interaction concerning diagnosis, risk communication and acute situations. Of all patients who reported inadequate Dutch proficiency, the language barrier was not documented in 30% of the patient records. Relatives of patients were often used as interpreter, whereas professional interpretation services were hardly used. Although professional interpretation services generally constitute the optimal method to bridge a language barrier, consulting a professional interpretation service was found not to be feasible in certain risky situations, such as a language barrier during routine safety checks performed by nurses.
METHODOLOGICAL ISSUES

Strengths and limitations of the studies in this thesis

**Strengths**

The most important strengths of the studies included in this thesis relate to:

1. **The use of multiple data sources**
2. **The use of different methods**
3. **The recruitment of a large group of ethnic minority patients**

1. **The use of multiple data sources**

We used multiple data sources: the hospital discharge register (HDR), patient records, patient questionnaires, transcripts of interviews with both care providers and patients and their relatives, and this is a strength of this thesis. The use of these multiple data sources enabled us to both measure process and outcome, enabling us to link process and outcome.

2. **The use of different methods**

The use of different methods enabled us to identify mechanisms in the care process underlying the relation between ethnic origin and patient safety. This has increased our opportunities for interpretation of the results. The qualitative methods have given us more insight in what we have actually ‘counted’, while qualitative methods alone would have given us just ‘a feeling’.

The methods and data sources have really enriched each other. E.g. if we would only have had outcome data (i.e. no elevated AE risks for ethnic minority patients), we might have had assumed no increased risks for ethnic minority patients. The other way around we would have had assumed elevated AE rates for ethnic minority patients when we only had process data (i.e. more patient safety risks during hospital care when a language barrier is present).

3. **The recruitment of a large group of ethnic minority patients**

Ethnic minorities in general are often excluded from research for various reasons (‘hard to reach’, language barriers). [1] In the patient safety cohort study (Chapters 4-7) the use of translated materials, bilingual research assistants, and family members of patients enabled us to include 576 ethnic minority patients, including those with low Dutch proficiency. We have put much attention to including hospitalized patients by multiple visits and accommodating to patients’ wishes.

Because ethnic origin is not recorded, large registry databases are inadequate for analyzing ethnicity. By linking the HDR to the population register (PR) we were able to classify admitted patients by ethnic origin and thus to analyze ethnic inequalities in excess LOS, readmission rates and arthroplasty rates (Chapters 2 and 3).


**Limitations**

The most important general limitations of the studies included in this thesis relate to

1. Barriers to inclusion and classification of ethnic minority patients in research
2. Potential observer bias in the record review
3. Lack of data on professionally defined need for care

1. **Including/recruiting ethnic minority patients**

Despite of all efforts we proactively made, we still faced the challenges of recruitment of ethnic minority patients in the cohort study and of correct classification of ethnic minority patients in register-based data.

In the studies performed with the record linked dataset, individuals from ethnic minority background were less often uniquely linkable. Linkage of the HDR and PR is unsuccessful when two people have the same date of birth and the same 4-digit postal code. The dates of birth of some first-generation migrants of Turkish and Moroccan ethnic origin are according to a non-Gregorian calendar. When the PR converts their date of birth to the Gregorian calendar, usually the 1st of January or the 1st of July are chosen (born in winter vs. born in summer). This results in many persons with the same date of birth. When two persons with the same date of birth and the same sex also live in the same neighborhood and thus have the same postal code, they cannot be uniquely linked.[2,3]

In the cohort study where patients were included during hospital admission, we faced that language barriers sometimes led to ‘inapproachability’ of patients. However, we have still managed to include many patients with low Dutch proficiency because of our translated materials and the presence of bilingual research assistants, and sometimes with help of a present family member.

2. **Potential observer bias in record review**

A general limitation of patient record review studies is potential observer bias. Although the patient’s ethnic background was not explicitly mentioned to the record reviewers, it was not possible to blind them entirely to the study groups. Surnames, photos, and notes in the records often provided indications of the patient’s ethnic background. This may have influenced the reviewers, as it may have affected the way they interpreted what they found.

To minimize this potential observer bias, we made sure that individual reviewers reviewed equal numbers of records of both Dutch and ethnic minority patients and potential issues of observer bias were explicitly addressed and discussed at reflection days with all reviewers.

In addition, the structured and highly standardized review procedure reduced the risk of bias.

3. **Lack of data on care need and other factors related to care consumption**

Because we had only data regarding hospital admissions, the interpretation of some of the findings was limited by a lack of data on professionally defined care need. Data on care need, for example in the studies on TJA rates and readmission rates, would have enabled us to be conclusive e.g. on whether the fivefold lower chance of being admitted for THA
compared to ethnic Dutch patients was caused by inequitable access to care for ethnic minorities. With the present data we cannot conclude whether THA rates were ‘too low’ or ‘appropriate’ in ethnic minority patients because it might have been that there was a lower need among ethnic minorities. Equitable care means ‘equal care for equal need’, i.e. that individuals with equal need (including comorbidity) should have the same chance to undergo THA. [4] Other factors related to care consumption are also necessary to determine whether or not observed inequalities in care consumption reflect inequities in care. In the TJA study described in Chapter 3, information on the proportions of OA patients by ethnicity who were not referred by their GP, for example, would have given us the opportunity to determine GP-referral behavior as a cause of unequal access to TJA. Ethnic inequalities in excess LOS and readmission rates may reflect appropriate care if ethnic minorities have increased care needs. These can be associated with factors that complicate the process of care, such as language barriers or unfavorable social circumstances at home.

Internal validity and generalizability

Internal validity

Record review is currently the most valid method for assessing frequency and types of AEs, and has high face validity with healthcare workers.[5] However, it may be less adequate for assessing underlying causes of AEs related to patient-provider interaction. Detailed descriptions of patient-provider interaction were often absent from the records. Even with extensive record texts, one would need observation or video-analysis to unravel the interaction in detail and to judge, for instance, whether a care provider has made sufficient efforts to explain certain risks to a patient. We also identified a few cases in both study groups of the record review study where harm, but no AE was detected, and where patient behavior had been the cause of this harm (e.g. non-compliance, alcohol abuse, no-show in outpatient clinic). When harm is not caused by healthcare (management), there is no AE according to our criteria. However, the extent to which a healthcare provider may be held responsible for patient non-compliance with regard to therapy or recommendations is still an area of debate.

Generalizability

Generalizability of patient safety incidence rates

When comparing (preventable) AE incidence rates as found in Chapter 4 with those of two nationwide Dutch studies on AEs during hospitalization, large discrepancies are absent. [6,7] This suggests that our sample is quite representative for the general hospital population in the Netherlands. Even though the goal of our record review study was to generate two comparable study groups rather than creating a sample that was representative for the Dutch hospital population, the comparability of incidence rates to representative Dutch studies with larger sample sizes suggest that our inclusion method has succeeded in avoiding selection bias regarding vulnerability to AEs.
Generalizability to other ethnic minority groups

In this thesis we focused on ethnic minority patients who were mostly of Turkish, Surinamese, Antillean/Aruban, or Moroccan origin. However, some results are likely to be applicable to other ethnic minority patients (if results relate to common risk factors shared by ethnic minority patients) and sometimes even to all patients irrespective of ethnic origin (if results relate to risk factors shared by all patients). For example, the results regarding relatives of patients participating in the care process that showed that relatives can both increase and decrease patient safety risks are (largely) applicable for all hospitalizations where relatives are involved. The language-barrier related risks we found are applicable to all patients with inadequate Dutch proficiency, irrespective of their ethnic origin. The phenomenon of findings that are not unique for a specific ethnic group was described as ‘the magnifying glass effect’ by Seeleman who studied cultural competence and diversity responsiveness in healthcare: “The issues found were not in fact unique to patients from these groups but seemed to be more intense expressions of the general difficulties in healthcare associated with an ethnically diverse patient population”.[8]

Generalizability to other hospitals in the Netherlands

The studies on patient safety (Ch4-7) were all carried out in urban hospitals with an ethnically diverse patient population. Therefore, study results for ethnic minorities, especially the AE incidence rates, might not be representative for all Dutch hospitals, but only for comparable urban hospitals with ethnically diverse patient populations. It could be that care providers who are used to caring for ethnic minority patients, eliminate patient safety risks like a language barrier. Although unsystematically and without adhering to professional guidelines, it might have been better than providers who are not used to care for ethnic minority patients.

Generalizability to other countries

The results of our studies may be of relevance to countries with similar healthcare systems and comparable ethnic minority groups regarding reason of migration, length of stay in the host country, and cultural and language characteristics. However, this needs to be investigated in future studies in these countries. This study is probably not generalizable to countries without universal healthcare access. Also, the typical ‘minority serving hospitals’ with generally lower quality of care in the United States that are described in several papers, are absent in the Netherlands. [9, 10] In the Netherlands, some hospitals have a higher ethnically diverse patient populations than others, but in the Netherlands all hospitals provide care of basically similar quality. This makes the study results incomparable to the results of similar studies performed in the United States.
REFLECTION

The general research question for this thesis was "Are there ethnic inequalities in patient safety?". The answer to this research question is: Yes and No. Yes, there are ethnic inequalities in patient safety risks, but no, we found no ethnic inequalities in patient safety outcomes. Furthermore, we found indications for ethnic inequalities in access to hospital care (i.e. access to TJA) and inequalities in excess LOS and readmission rates.

Equal patient safety outcomes – unequal patient safety risks

This thesis shows that patients of ethnic minority origin did not experience more AEs than ethnic Dutch patients, although they sometimes faced higher risks for AEs. Our qualitative data showed that care providers in the hospitals that we investigated, put a lot of effort in the care for ethnic minority patients, and this was confirmed by our observations during patient inclusion and reflection days with record reviewers. Also, involved family members might have played a role in the maintenance of the safety although this thesis shows that relatives can also be ‘contra-protective’.

AEs are the most critical outcome measure known, and many ‘failures’ must take place before an AE occurs. For example, when a wrong medication dosage is prescribed to a patient, there are many ‘layers of defense’ before this wrong medication will actually reach the patient. E.g. the hospital pharmacist will check the recipe, sometimes a computerized order entry system will give an ‘alert’ and the nurse who prepares the medication round will check again. We hypothesize that more unintended events and near misses may have taken place in the ethnic minority group, but that these were captured in time before developing into AEs, and thus other layers of defense were still substantial.

An example of the ‘drop out’ of a layer of defense was illustrated in one of the interviews, when a nurse explained that she could not verify the date of birth and medication with the patient because of a language barrier. Probably, in some cases a layer of defense dropped out because of the language barrier, but luckily all other layers of defense had done their work. In other cases, the layer of defense (i.e. date of birth verification) was improvised by the care provider, by asking relatives to translate or using digital translating tools.

The equal patient safety outcomes are good news, but our data suggest that elevated risks were eliminated in an ad hoc rather than a systematic way. If we go back to the example above, no standards, guidelines or protocols were present to do date of birth checks in patients not mastering Dutch. Many clinical tasks, such as medication preparation by nurses, which is known as a critical and risky step in the care process, are highly systematically protocolised. Why is language barrier bridging not?

In the international literature, the link between process and outcome has rarely been described. Although several US studies showed ethnic inequalities in patient safety,[11,12,13] a recent systematic review concluded that “there is extensive evidence on disparities in the process and outcomes of health care, but data on racial and ethnic disparities in patient
safety remain inconclusive in the United States”. This inconclusiveness is mainly caused by the fact that quality differences between hospitals were not or poorly taken into account in the reviewed studies.[14] As also discussed in the ‘methodological considerations’ chapter, this is the reason that US patient safety studies are not easily generalized to the Dutch situation.

**Excess LOS and readmission rates.**

In the study described in chapter two, we found ethnic inequalities in excess length of stay (LOS) and readmission rates. These inequalities were also reported internationally. [9, 15] However, several US studies noted that outcomes are mediated by patients’ race as well as the hospital where care was delivered, which is probably not the case in the Netherlands. [16] The nationwide higher readmission rates and excess LOS we found in chapter two were not confirmed in the cohort study described in chapter four, where we found no significant differences in LOS and readmission rates between the study groups. The two studies have different sampling and measurement methods and therefore results should be compared with caution.

**Ethnic inequalities in access to care?**

Our observation that ethnic minority patients were underrepresented at orthopedic surgery wards was partly confirmed by showing that Dutch patients had 5 times higher admission rates for total hip arthroplasty than ethnic minorities. Similar findings were also reported internationally.[17-21]

However, we found no ethnic inequalities in TKA, a finding that opposes many international findings. This finding surprised us, as we expected lower TKA rates for ethnic minorities as well. Future studies should 1. Unravel the difference between TKA and THA results we found, and 2. investigate at which place(s) in the care pathway the THA inequality between Dutch and ethnic minority patients is caused, and whether it is patient related (e.g. less need) or provider related (less referrals) or patient related (preference –based) and thus whether it is appropriate or not.

In the cohort study described in chapter five, we found another possible access inequality. In the four urban hospitals where data collection for studies described in Ch5-7 took place, we saw that ethnic minorities were more often admitted via the emergency department while Dutch patients had more elective admissions. We can only speculate about the cause of this inequality. Both the care providers that were interviewed for the studies described in Chapters 6 and 7 and the record reviewers with whom we extensively discussed cases during reflection days hypothesized that persons with language barriers were more often admitted from the emergency room ‘just to be sure’, and received more diagnostic tests. The scientific evidence regarding ethnic inequalities in acute vs. elective admissions is scarce.
IMPLICATIONS AND RECOMMENDATIONS

This thesis revealed several recommendations for practice, policy, and future research

Implications for practice

- Communication barriers of any kind should systematically be recorded in patient records, and when the patient has no mastery of the majority language, the preferred language of the patient should also be recorded. This is in accordance with the JCI Standards[22,23]
- Guidelines for effective bridging of language barriers should be implemented, and (future) care providers should learn how to effectively bridge language barriers. In the Netherlands, a decision aid for bridging language barriers in different situations was recently published. [24] Ikram and colleagues developed an e-learning module focussing on effective bridging of a language barrier using professional interpreters.[25] In the Netherlands, the opportunity to consult professional interpretation services is present, but their availability does not guarantee their use.[26] As long as care providers do not possess adequate knowledge, attitudes and skills to use them effectively, the availability of professional interpretation services will not improve patient care.
- For daily nursing care moments where a language barrier is a risk, but a (professional) interpreter is not feasible, other solutions must be developed, such as digital multiple-language explanations for usual nursing tasks like pain measurement and fluid-balance management.
- When relatives participate in the care process, a thorough intake with these participating relatives should take place, including risk-communication. Appointments with relatives regarding care must explicitly be written down and must be clear for all care providers. Patient safety responsibility must never be handed over to relatives.
- Systematic training of (future) care providers in diversity sensitive care.[27]

Implications for policy

Nationwide and hospital wide policies may for example make the above named recommendations for practice (technically) available. First, by encouraging diversity sensitive care and adequate bridging of language barriers, e.g. by providing education opportunities for care providers. Second, by making the use of interpreters technically available, e.g. availability of suitable telephones. Additionally, by financial reimbursement of the use of interpretation services in healthcare needs to be improved and time provision for consultations including interpretation needs to be extended.[28]
Also, we suggest that national hospital quality accreditation programs pay attention to the care for ethnic minorities and the bridging of language barriers, and the Dutch healthcare inspectorate may do so as well. E.g. by inspecting patient records for language barrier (bridging) reports.
Recommendations for future research

As this was the first study investigating ethnic inequalities in AEs in a European setting, we recommend replication of studies investigating ethnic inequalities in AEs in other European countries to enlarge the body of scientific evidence on this topic. Second, as we possibly found ethnic inequalities in healthcare provision, but we could not be conclusive because of a lack of data on professionally defined healthcare need, we recommend future studies into ethnic inequalities in healthcare to add data on professionally defined ‘need’, to include data on all other stages in the care pathway, and to include data on patient preferences.[4] Only when we are sure that ‘need’ is equal, but care consumption is not (for example in total hip arthroplasty rates) and patient preferences do not explain the difference, we can conclude that the observed inequalities in healthcare consumption reflect inequities in healthcare.[4] Currently, we are not sure whether the lower THA rates reflect less ‘THA need’ among ethnic minorities, or patient preferences, or inequitable access to THA.

Our studies also revealed new research questions in the domain of efficiency of hospital care that deserve further research. Efficient health care means delivering health care in a manner which maximizes resource use and avoids waste.[29] Two research questions that emerged were:

*Do language barriers lead to increased use of diagnostic tests and to more hospital admissions? And Is the use of professional interpretation services cost-effective in the longer term?*

From being around in hospitals, speaking with medical students who helped the author with data collection, and interviewing care providers, we got a strong impression that a good consultation with the help of a professional interpreter at the beginning of a hospital care process, may prevent unnecessary ER visits, diagnostic tests and readmissions and reduce length of stay, burden for the patients, and costs.
CONCLUSIONS

Ethnic minority patients in Dutch hospital care...
... have more readmissions and excess length of hospital stay than ethnic Dutch patients
... have lower total hip arthroplasty but equal total knee arthroplasty rates compared to ethnic Dutch patients
... have equal adverse event rates compared to ethnic Dutch patients
... are often accompanied by relatives who often take over the roles of patient, care provider and interpreter which can have both a positive and a negative influence on patient safety
... have increased patient safety risks when they have inadequate mastery of the Dutch language. The language barrier is often not adequately reported nor bridged.

We conclude by shortly answering our main research question: Are there ethnic inequalities in patient safety in Dutch hospital care? No, we did not find ethnic inequalities in patient safety outcomes (AEs) in Dutch hospitals with ethnically diverse populations. However, we did find increased patient safety risks for ethnic minorities and thus patient safety of ethnic minorities deserves a place on the healthcare agenda.
REFERENCES


27) http://www.amc.nl/C2ME
